WHAT IS CLAIMED IS:

1. A constant impedance filter, comprising:

a plurality of filter poles that each have a common input impedance that is substantially constant over frequency, each filter pole having a resistor, a capacitor, and an inductor having values related by,

$$C = \frac{L}{R^2},$$

wherein C is a capacitance of said capacitor, R is a resistance of said resistor, and L is an inductance of said inductor.

2. The constant impedance filter of claim 1, wherein said filter poles are low pass filter poles.

3. The constant impedance filter of claim 2, wherein a first inductor in a first lowpass filter pole is series-connected with a second inductor in a second lowpass filter pole.

4. The constant impedance filter of claim 1, wherein said filter poles are high pass filter poles.

5. The constant impedance filter of claim 4, wherein a first capacitor in a first highpass filter pole is series-connected with a second capacitor in a second highpass filter pole.

6. The constant impedance filter of claim 1, wherein said filter poles include at least one lowpass filter pole and at least one high pass filter pole.

7. The constant impedance filter of claim 1, wherein each of said filter poles is a differential lowpass filter pole.

8. The constant impedance filter of claim 1, wherein each of said filter poles is a differential high pass filter pole.

9. The constant impedance filter of claim 1, further comprising a termination resistor connected to an output of said plurality of filter poles.

10. The constant impedance filter of claim 9, wherein said resistors in each filter pole have a common resistance value, and wherein said termination resistor has said common resistance value.

11. A constant impedance low pass filter; comprising:

a plurality of low pass filter poles between an input and an output of said filter that are series connected with each other;

wherein each low pass frequency pole includes,

a resistor connected to ground,

a capacitor connected to said resistor, and

an inductor connected to said capacitor;

wherein a value of said capacitor is determined by the following relationship,

$$C = \frac{L}{R^2};$$

wherein C is a capacitance of said capacitor, R is a resistance of said resistor, and L is an inductance of said inductor.

12. The constant impedance lowpass filter of claim 11, further comprising a termination resistor connected to said output of the filter.

13. The constant impedance lowpass filter claim 11, wherein an input impedance of each said lowpass filter pole of the constant impedance filter is independent of the frequency of signals supplied to the constant impedance filter.

14. The constant impedance lowpass filter of claim 11, wherein said capacitance, said inductance, and said resistance in each low pass pole are determined to provide a common input impedance for all the lowpass poles, thereby providing said constant input impedance for at the constant impedance filter.

15. The constant impedance lowpass filter of claim 14, further comprising a termination resistor that is connected to an output of said plurality of lowpass filter poles.

16. The constant impedance lowpass filter of claim 15, wherein a value of said termination resistor is based on said common input impedance.

17. A differential lowpass filter having a constant impedance, comprising:

a plurality of differential low pass filter poles between an input and an output of the differential lowpass filter that are series connected with each other; and

a termination resistor coupled across said output of said filter;

wherein each differential low pass frequency pole includes a first inductor, a second inductor, a resistor, and a capacitor;

wherein a value of said capacitor is determined by the following relationship,

$$C = \frac{L}{R^2};$$

wherein C is a capacitance of said capacitor, R is a resistance of said resistor, and L determines an inductance of said first inductor and said second inductor.

18. The differential lowpass filter of claim 17, wherein said capacitance, said inductance, and said resistance in each differential lowpass pole is determined to provide a common input impedance for each of the lowpass poles, thereby providing said constant input impedance for said differential filter.

19. The differential lowpass filter of claim 18, further comprising a termination resistor that is connected to an output of said plurality of differential lowpass filter poles.

20. The differential lowpass filter of claim 19, wherein a value of said termination resistor is based on said common input impedance.

21. A bandpass filter, comprising:

a plurality of low pass filter poles between an input and an output of the bandpass filter that are series connected with each other, wherein each said lowpass filter element includes a first resistor, a first capacitor, and a first inductor; and

a plurality of high pass filter poles between said input and said output of the bandpass filter that are series connected with each other, said plurality of highpass filter poles arranged in parallel said plurality of lowpass filter poles, wherein each said highpass filter pole includes a second resistor, a second capacitor, and a second inductor;

wherein a value of said first capacitor and said second capacitor are determined by the following relationship,

$$C = \frac{L}{R^2};$$

wherein C_1 is a value of said first capacitor, C_2 is a value of said first capacitor, L_1 is a value of said first inductor, L_2 is a value of said second inductor, and R_1 is a value of said first resistor, and wherein R_2 is a value of said second resistor.

22. The bandpass filter of claim 21, wherein $R_1 = R_2$.